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<p>Development of a fiber optic-based sensor system is described in which zinc and cadmium are measured via fluorescence derived from complexation of the metal ion by a fluorogenic indicator molecule. The system uses a pulsed nitrogen laser to induce fluorescence and a linear photodiode array to measure the resulting fluorescence emission spectrum. Analysis times are fast (less than 1 second) and the method has been shown to produce linear calibration curves for zinc over the range of 0.1 to 10 nano-molar.</p> <p>Data is presented in which differences in fluorescence lifetimes for complexes of zinc and cadmium with the same indicator molecule is used in order to resolve the contribution of each species to the observed fluorescence signal. Results of initial field tests of this technique are used to evaluate the applicability of this technique for direct measurements of zinc and cadmium in seawater at nano-molar concentrations. Reprints (AW) *</p>			
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